REF. 00121-000800000 METHOD AND SYSTEM FOR MANAGING TIME-OUT EVENTS
IN A STORAGE AREA NETWORK TUAN NGUYEN
10/28/2003
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FIG. 1

REF. 00121-000800000 METHOD AND SYSTEM FOR MANAGING TIME-OUT EVENTS
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FIG. 2

REF. 00121-000800000 METHOD AND SYSTEM FOR MANAGING TIME-OUT EVENTS
IN A STORAGE AREA NETWORK   TUAN NGUYEN
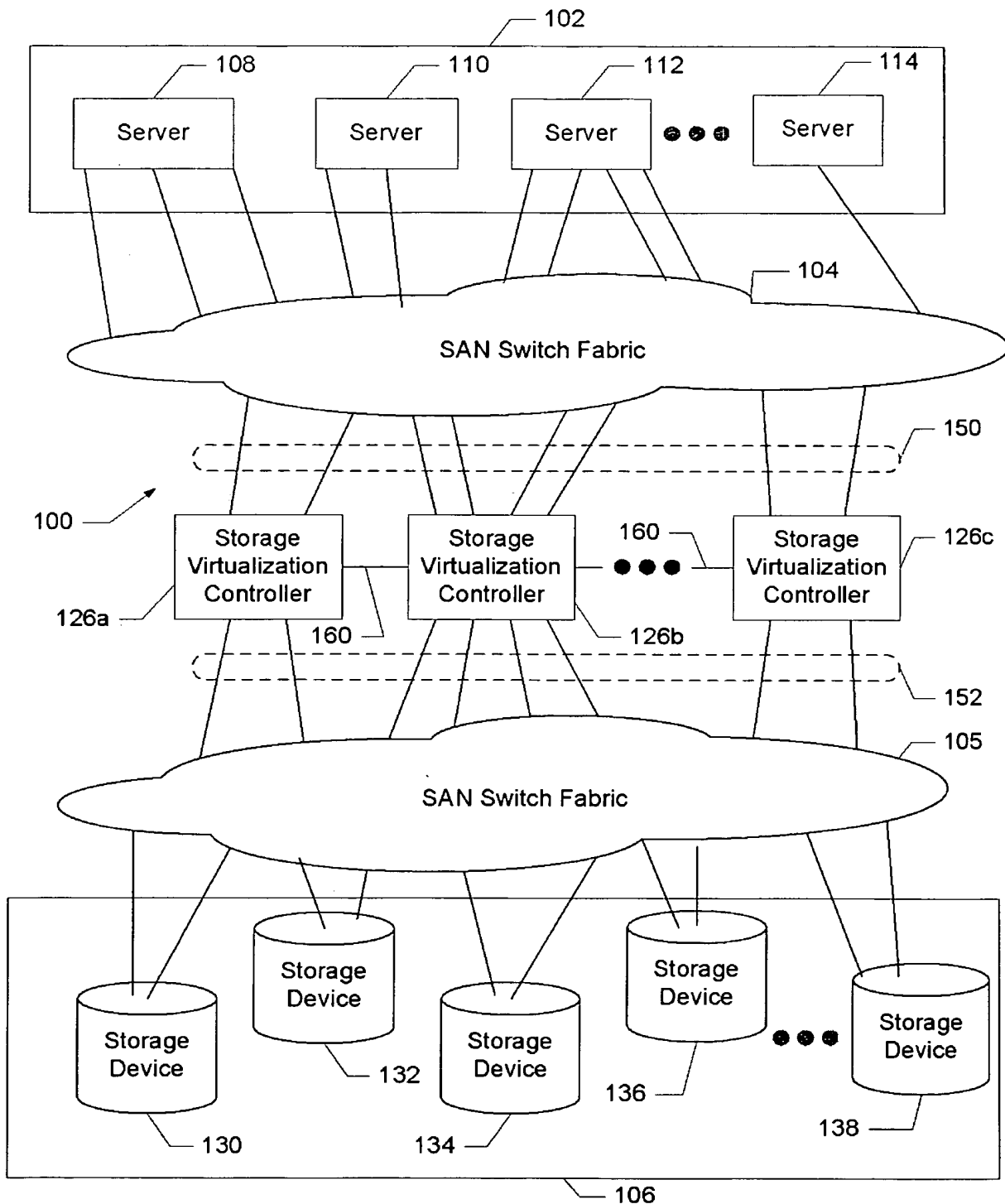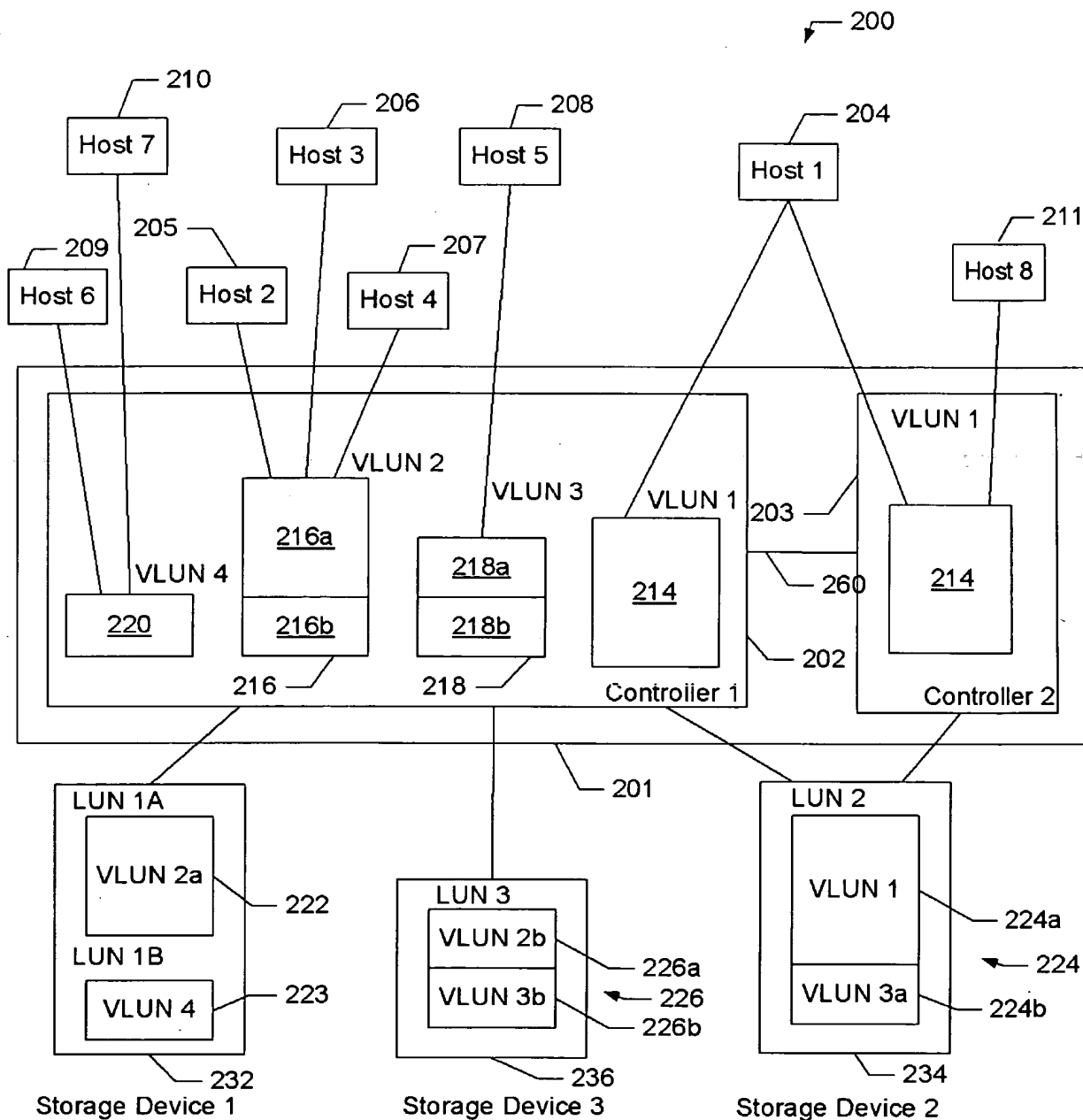10/28/2003
REPLACEMENT SHEET 3/9

FIG. 3

Timer Event

— 402

404 —

Timer Control Block 0
◆Tick Interval
◆Hardware Tick Conversion
◆Top of Queue Header

406 —

Timer Control Block n
◆Tick Interval
◆Hardware Tick Conversion
◆Top of Queue Header

Timer Queue Header 0
◆Semaphore Info
◆Queue Count

— 410

416 —

Timer Link Control Block 0
◆Time out handler
◆Timer Queue Holder
◆Context Loop Info

418 —

Context Control Block

420 —

Timer Link Control Block X
◆Time out handler
◆Timer Queue Holder
◆Context Loop Info

422 —

Context Control Block

Timer Queue Header 1
◆Semaphore Info
◆Queue Count

— 408

412 —

Timer Queue Header (m-1)
◆Semaphore Info
◆Queue Count

424 —

Timer Link Control Block 0
◆Time out handler
◆Timer Queue Holder
◆Context Loop Info

426 —

Context Control Block

428 —

Timer Link Control Block Y
◆Time out handler
◆Timer Queue Holder
◆Context Loop Info

430 —

Context Control Block

414 —

Timer Queue Header m
◆Semaphore Info
◆Queue Count

432 —

Timer Link Control Block 0
◆Time out handler
◆Timer Queue Holder
◆Context Loop Info

434 —

Context Control Block

436 —

Time Link Control Block Z
◆Time out handler
◆Timer Queue Holder
◆Context Loop Info

438 —

Context Control Block

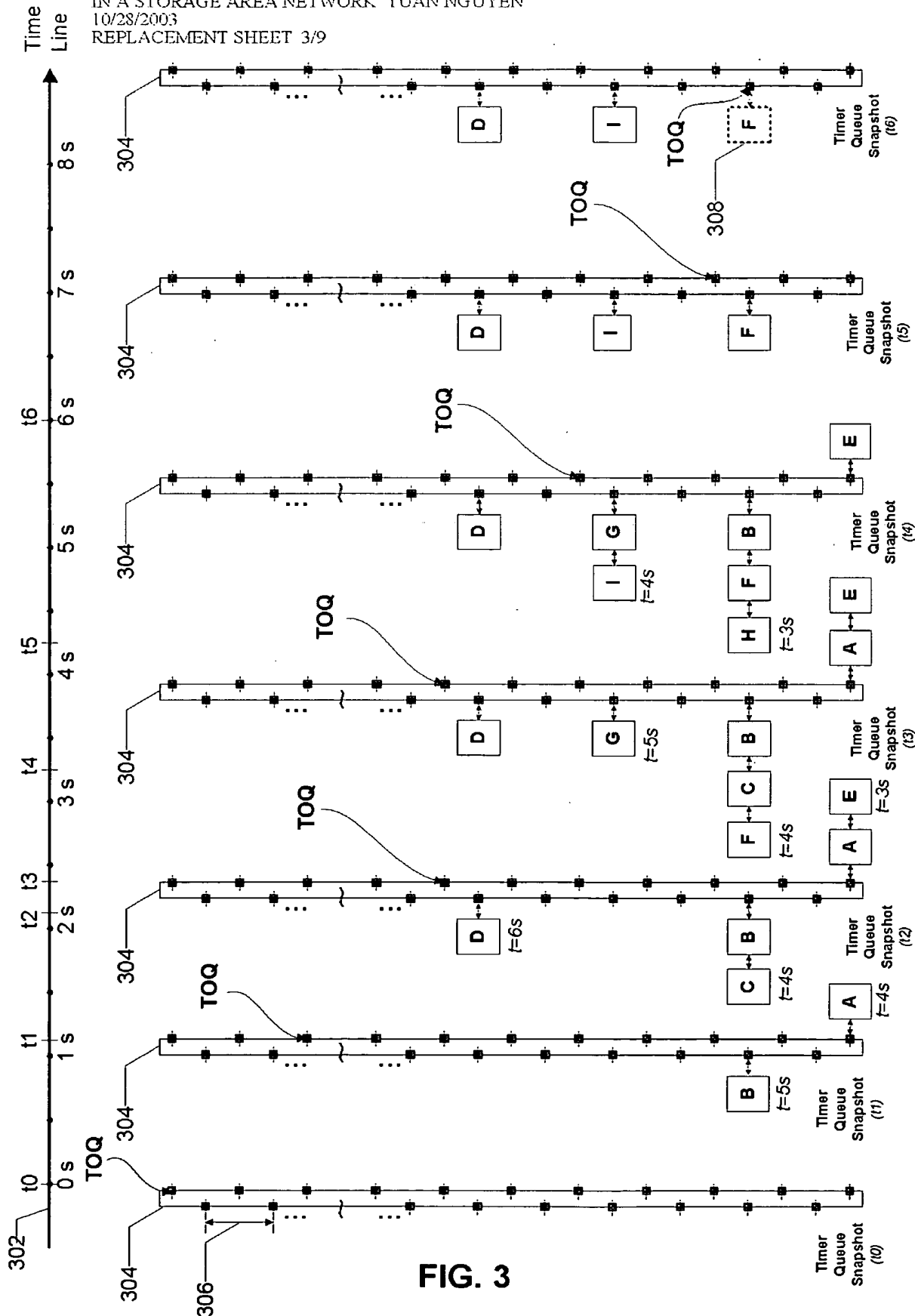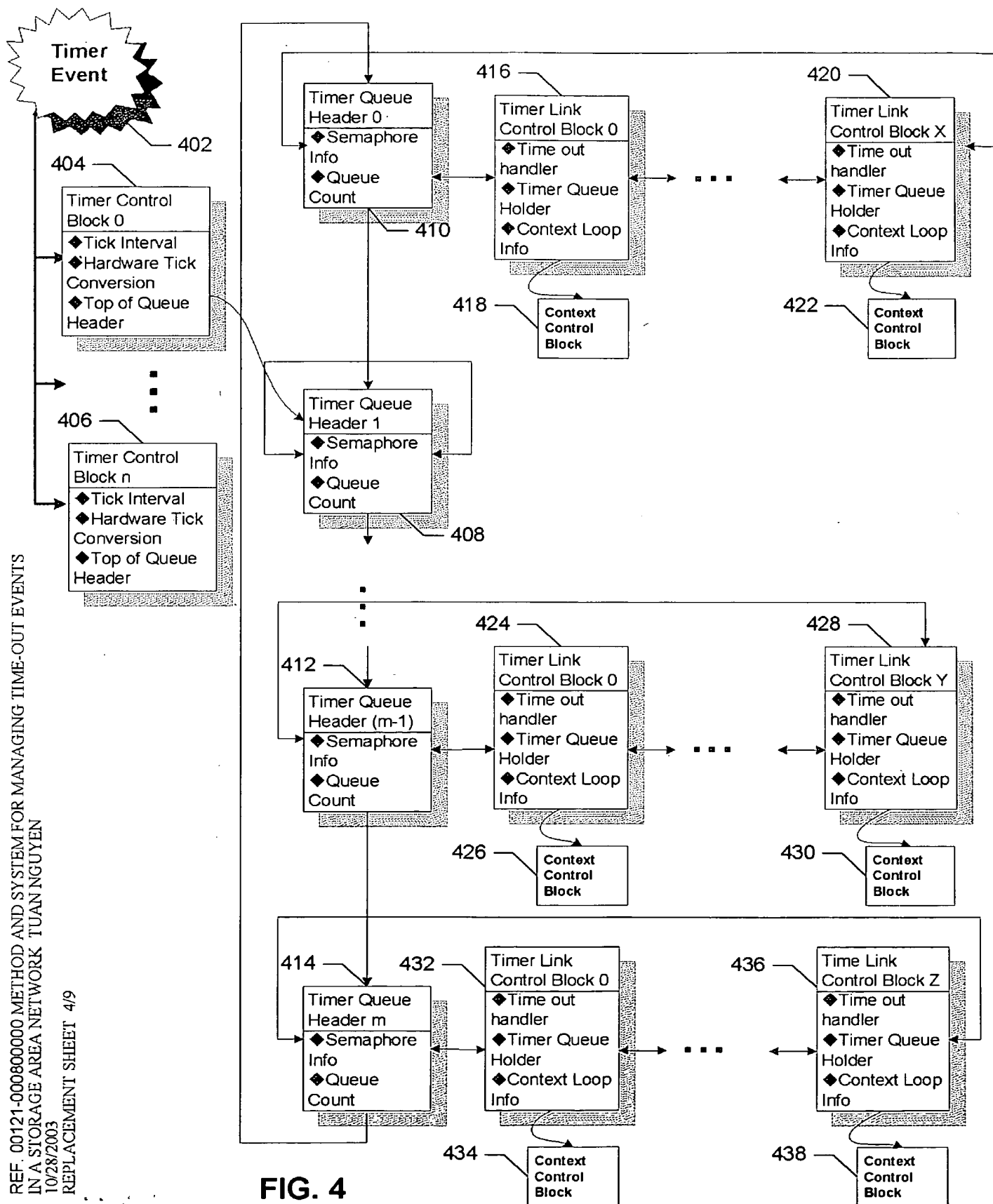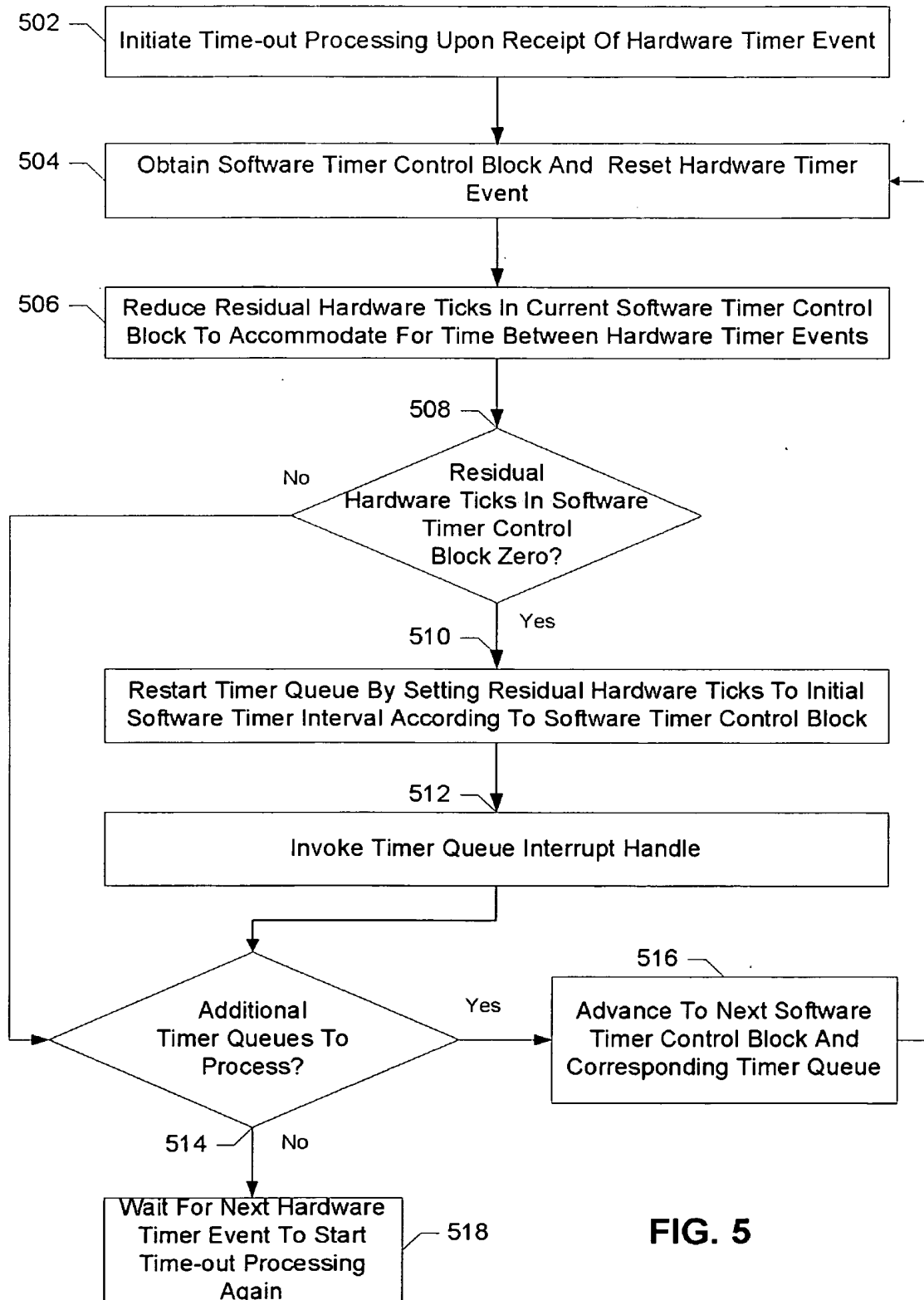## FIG. 4

REF. 00121-000800000 METHOD AND SYSTEM FOR MANAGING TIME-OUT EVENTS
IN A STORAGE AREA NETWORK TUAN NGUYEN
10/28/2003
REPLACEMENT SHEET 5/9

502 — **Initiate Time-out Processing Upon Receipt Of Hardware Timer Event**

504 — **Obtain Software Timer Control Block And Reset Hardware Timer Event**

506 — **Reduce Residual Hardware Ticks In Current Software Timer Control Block To Accommodate For Time Between Hardware Timer Events**

508 — **Residual Hardware Ticks In Software Timer Control Block Zero?**

No

Yes

510 — **Restart Timer Queue By Setting Residual Hardware Ticks To Initial Software Timer Interval According To Software Timer Control Block**

512 — **Invoke Timer Queue Interrupt Handle**

Additional Timer Queues To Process?

Yes

516 — **Advance To Next Software Timer Control Block And Corresponding Timer Queue**

514 — No

Wait For Next Hardware Timer Event To Start Time-out Processing Again — 518

FIG. 5

REF. 00121-000800000 METHOD AND SYSTEM FOR MANAGING TIME-OUT EVENTS
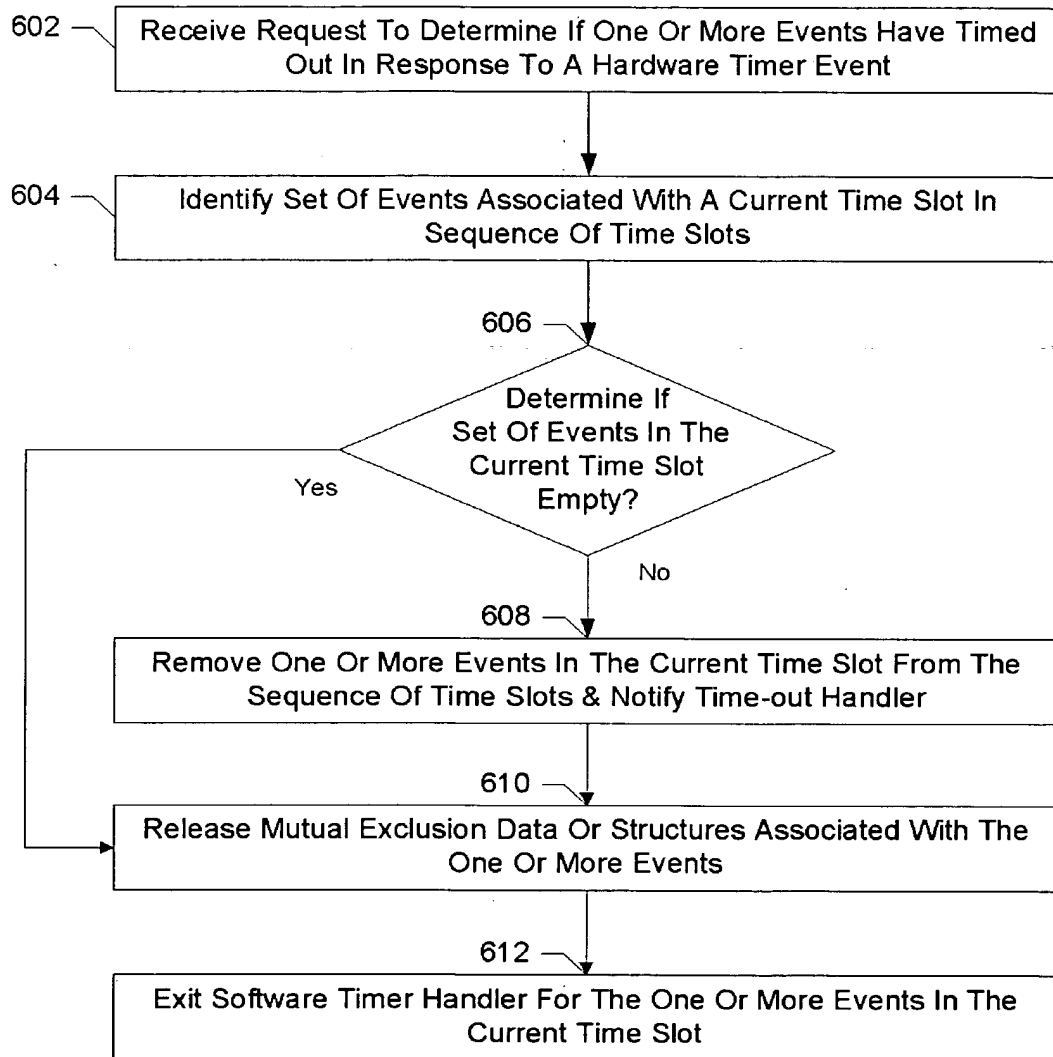IN A STORAGE AREA NETWORK TUAN NGUYEN
10/28/2003
REPLACEMENT SHEET 6/9

602 — Receive Request To Determine If One Or More Events Have Timed Out In Response To A Hardware Timer Event

604 — Identify Set Of Events Associated With A Current Time Slot In Sequence Of Time Slots

606 — Determine If Set Of Events In The Current Time Slot Empty?

Yes

No

608 — Remove One Or More Events In The Current Time Slot From The Sequence Of Time Slots & Notify Time-out Handler

610 — Release Mutual Exclusion Data Or Structures Associated With The One Or More Events

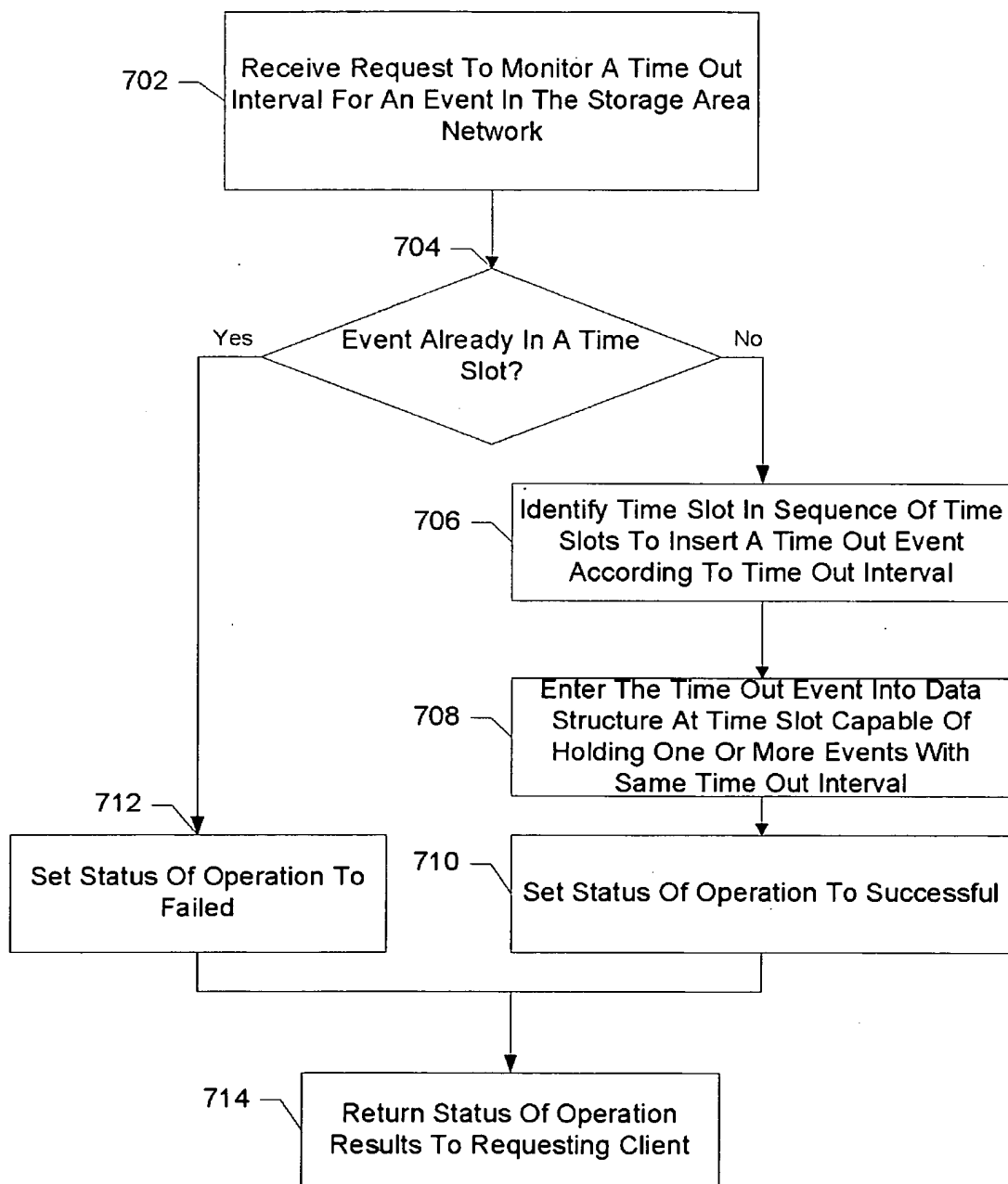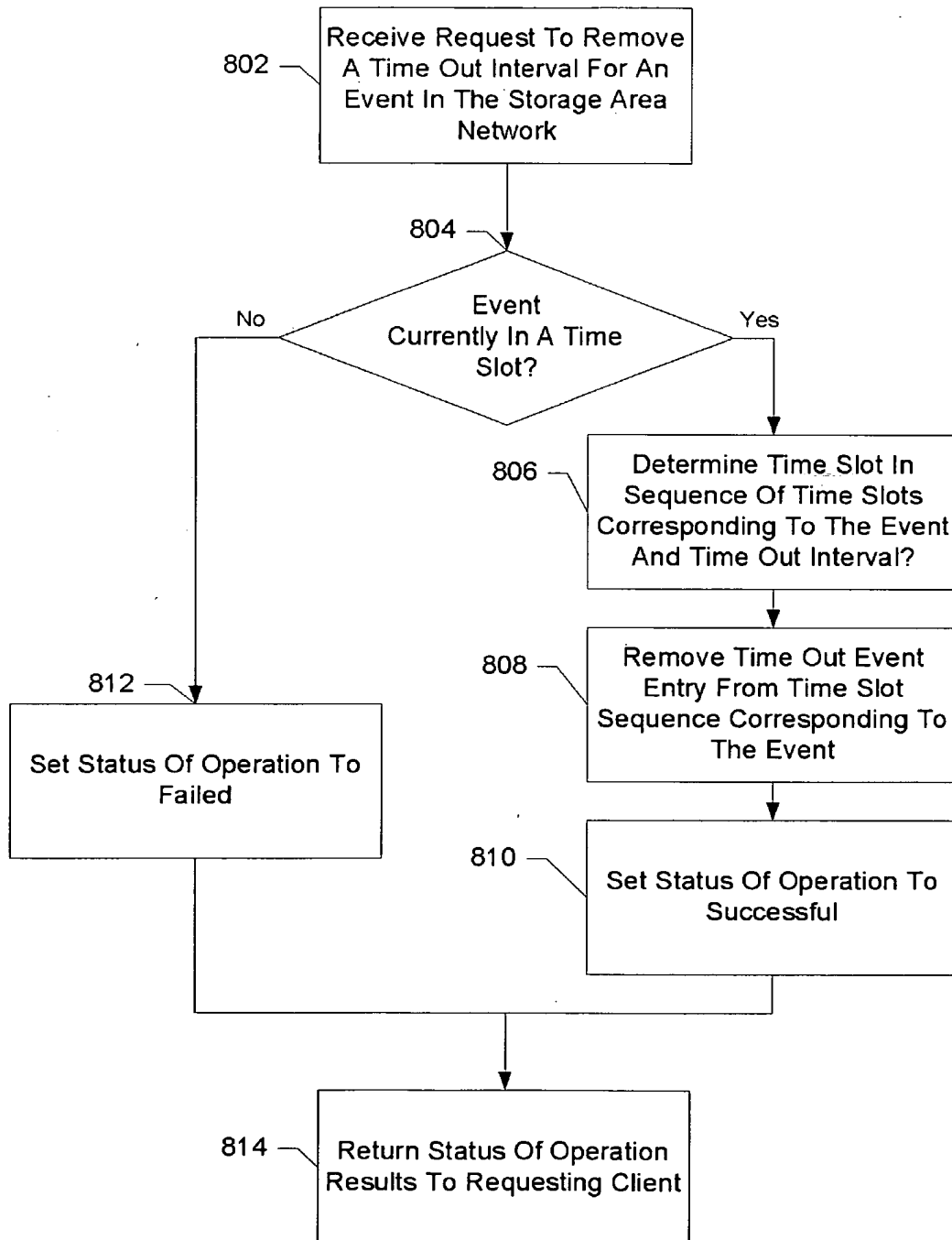612 — Exit Software Timer Handler For The One Or More Events In The Current Time Slot

FIG. 6

REF. 00121-000800000 METHOD AND SYSTEM FOR MANAGING TIME-OUT EVENTS
IN A STORAGE AREA NETWORK TUAN NGUYEN
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REPLACEMENT SHEET 7/9

702 — **Receive Request To Monitor A Time Out Interval For An Event In The Storage Area Network**

704 —

Event Already In A Time Slot?

Yes   No

706 — **Identify Time Slot In Sequence Of Time Slots To Insert A Time Out Event According To Time Out Interval**

708 — **Enter The Time Out Event Into Data Structure At Time Slot Capable Of Holding One Or More Events With Same Time Out Interval**

712 — **Set Status Of Operation To Failed**

710 — **Set Status Of Operation To Successful**

714 — **Return Status Of Operation Results To Requesting Client**

FIG. 7

REF. 00121-000800000 METHOD AND SYSTEM FOR MANAGING TIME-OUT EVENTS
IN A STORAGE AREA NETWORK TUAN NGUYEN
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802 — Receive Request To Remove
A Time Out Interval For An
Event In The Storage Area
Network

804 — Event Currently In A Time Slot?
No / Yes

806 — Determine Time Slot In
Sequence Of Time Slots
Corresponding To The Event
And Time Out Interval?

808 — Remove Time Out Event
Entry From Time Slot
Sequence Corresponding To
The Event

810 — Set Status Of Operation To
Successful

812 — Set Status Of Operation To
Failed

814 — Return Status Of Operation
Results To Requesting Client

FIG. 8

REF. 00121-000800000 METHOD AND SYSTEM FOR MANAGING TIME-OUT EVENTS
IN A STORAGE AREA NETWORK TUAN NGUYEN
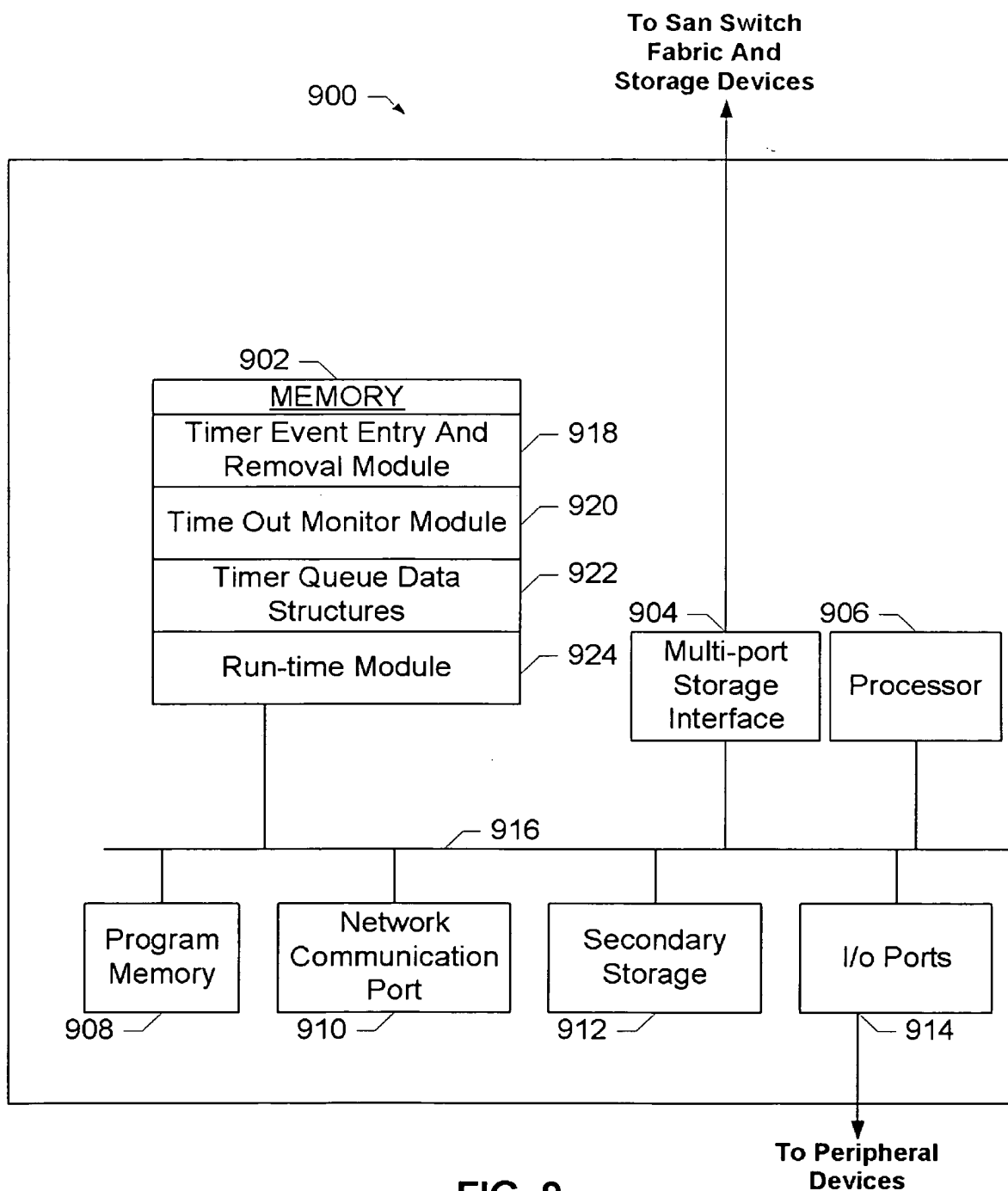10/28/2003
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FIG. 9